Dell™ Business Client E-Family Re-Image How-To Guide

Notes

NOTE: A NOTE indicates important information that helps you make better use of your computer.

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Contents

Overview

The purpose of this document is to detail the required steps for re-imaging Dell E-Family notebooks with Microsoft® operating systems. Dell Mobile Precision Workstations™ also support Red Hat® Linux 5.1. This document is specific to Microsoft operating systems.

Dell E-Family systems ship with MS Windows XP® SP3 or Vista® SP1. These images include the Dell recommended software stack and settings including drivers and applications which were tested and validated with the system.

Drivers and applications must be installed on Dell E-Family systems in a prescribed order to ensure optimal performance. Failure to install drivers and applications as detailed in this document may result in undesirable performance.

Dell provides Drivers and Applications that are not included in Microsoft operating systems. These drivers are required to enable the new technologies and features of Dell E-Family products. Reinstalled images should be built starting from a clean OS load and following the steps in this guide. Dell does not recommend starting from an image built for D-Family products or other computer systems.

This "How-To" guide applies to the following-Family systems:

- Dell Latitude™
  - E4200
  - E4300
  - E5400
  - E5500
  - E6400
  - E6400 ATG
  - E6500
- Dell Precision Mobile WorkStations
  - M2400
  - M4400
  - M6400

Supported Operating Systems

The following Microsoft operating systems have been validated for use on Dell E-Family notebook computers. These operating systems and their service packs are the latest and most updated releases from Microsoft.

- Microsoft Windows XP Service Pack-3 - 32-Bit
- Microsoft Windows XP Service Pack-3 - 64-Bit
- Vista Service Pack-1 - 32-Bit
- Vista Service Pack-1 - 64-Bit

E-Family New Features and Image Impact

Dell E-Family systems feature new hardware technologies that require a new software stack, drivers and / or applications. These products are not compatible with previous images built or installed on non E-Family or previous Dell products.

Among these new hardware and technologies are:

- Intel® ICH-9M Chipset
- Intel IRRT (Intel Rapid Recovery Technology)
- eSATA
- Intel AMT (Intel Active Management Technology)
- Graphics controller (Intel and nVidia®)
- Display Port
- Network LoM (Intel and Broadcom®)
- Wireless LAN
- Wireless WAN
- Bluetooth® / UWB
- Broadcom Unified Security Hub (USH)
- Contactless smartcard / RFID
- Webcam
- Dell ControlPoint
  - System Manager
  - Connection Manager
  - Security Manager
- Privacy Screen
- Touch Screen Digitizer (Only 6400 ATG)

Latest Drivers / Applications and Utilities

All Dell validated and tested drivers and applications are located on Dell's support web site (**support.dell.com**).

- Choose drivers and downloads
- Select Product Model and the Model Number

NOTE: The 32-bit or 64-bit version must be selected

Installation Sequence Overview

The list below is a general overview of drivers and applications that must be installed on Dell E-Family systems in a prescribed order to ensure optimal performance. Actual system configurations may vary.

- Updated BIOS
- Dell System Software - A compilation of critical Microsoft QFEs updates.
- Intel Chipset - Helps Windows control system board components and controllers.
- PCMCIA/SmartCard controller - Enables and enhances the PCMCIA/SmartCard controller.
- Intel Storage - Intel Matrix Storage Manager
- Sound Card - Enables and enhances the audio controller.
- Video Card - Enhances video performance.
- Integrated Wired Network Controller - Enables and enhances the network controller.
- Dell ControlPoint - DCP:
  - DCP System Manager
    - DCP All Day Battery Life - ADBL (Requires Dell DCP System Manager and security driver)
    - DCP - Ambient Light Sensor (Requires Dell DCP System Manager and ALS utility)
  - DCP Connection Manager
  - DCP - Security Manager (Requires Dell ControlPoint security driver)
- Wireless Network Controller - Enables and enhances the wireless network controller.
- Bluetooth Module - Enables and enhances the Bluetooth controller.
- Broadband Wireless Wide Area Network Controller
- Touch Pad/Track Stick/Pointer - Enhances the pointing device features.
- Modem - Enables and enhances the modem.
- Intel vPro™ or AMT™ - Enhances System Manageability

BIOS

Dell recommends flashing the latest BIOS available to the system. This is posted on Dell's driver and downloads support web site (**support.dell.com**), under **BIOS**.

Some of the BIOS settings are critical to operating system performance. These are as follows:

- SATA configuration mode (Applicable to all Dell E-Family Notebook systems except Dell precision M6400 workstation): To access SATA configuration mode, select **Settings→System Configuration→SATA Operation**.
  - **Disabled**: SATA Controllers are hidden
  - **ATA**: Basic Disk Operation mode, does not require additional storage driver.

  NOTE: eSATA is not functional in this mode.

  - **AHCI**: SATA is configured for AHCI (Advanced Host Controller Interface) mode, which offers faster performance, eSATA support and increased battery life. This mode requires an additional storage driver provided by Dell if an operating system other than those previously specified is installed on the notebook.
  - **IRRT (Default)**: SATA is configured to support IRRT (Intel's Rapid Recovery Technology), This mode supports AHCI mode features as well as disk mirroring (RAID-1). IRRT allows data backup and restoration. This mode requires an additional storage driver provided by Dell if an operating system other than those previously specified is installed on the notebook.

  NOTE: RAID support requires second hard disk drive.

  NOTE: This mode does not apply to E5400 and E5500 E-Family models.

  - **RAID (Default)**: Applicable to Dell precision M6400 workstation only in lieu of IRRT mode. SATA is configured to support RAID. This mode supports AHCI mode features as well as disk mirroring (RAID-0 and RAID-1). RAID allows data backup and restoration. This mode requires an additional storage driver provided by Dell if an operating system other than those previously specified is installed on the notebook.

- If AHCI or IRRT or RAID modes are selected, Intel's Matrix Storage Manager driver must be installed in conjunction with the installation of the operating system. See "Intel Storage - Intel Matrix Storage Manager" on page 17.
- TPM Security: These options enable and configure the Trusted Platform Module (TPM). If TPM is to be deployed, TPM must be enabled in the BIOS Setup program. To access TPM Security, select **Security→TPM Security**.
  - TPM Security:
    - **Disabled:** The BIOS will not turn on the TPM during POST. The TPM will be non-functional and invisible to the operating system.
    - **Enabled:** The BIOS will turn the TPM during POST, so that it can be used by the operating system.
  - **Deactivate (Default)** = The TPM will be deactivated and disabled.
  - **Activate** = The TPM will be enabled and activated.
  - **Clear** = The BIOS clears the information stored in the TPM.

Recommended Drivers / Applications, Installation Order

For best results, Dell recommends installing drivers / applications in the following order:

Microsoft QFEs

Dell recommends installing all of the latest available fixes specific to the system. These are available through the Dell System Software utility posted on Dell's driver and downloads support web site (**support.dell.com**) under **System Utilities**.

Intel Mobile Chipset

Microsoft operating systems do not include the updated Intel Chipset Mobile driver for Dell E-Family notebooks. If the operating system has been reinstalled, the following Intel Chipset driver provided by Dell must be installed:

- Intel Mobile Chipset driver, found under **Chipset** on Dell's driver and downloads support web site (**support.dell.com**)

PCMCIA / Smartcard Controller

Microsoft operating systems do not include the Ricoh™ R5C8xx Smartcard controller driver. Install the following driver provided by Dell:

- R5C8xx Ricoh driver, found under **Chipset** on Dell's driver and downloads support web site (**support.dell.com**)

Intel Storage - Intel Matrix Storage Manager

The Intel Matrix Storage Manager (IMSM) driver is required to be installed on operating systems other than those validated by Dell in AHCI, IRRT, and RAID SATA modes.

The SATA operation modes are configured in the BIOS. Refer to "BIOS" on page 15.

If the SATA mode is configured in AHCI, IRRT or RAID mode, the IMSM driver must be installed during the initial operating system installation stages. The IMSM driver is only available from Dell.

Microsoft operating systems other than those specified at the beginning of this document do not include this driver. If SATA configuration mode in the BIOS is set to either AHCI, IRRT or RAID install the following Dell IMSM driver:

- Intel Matrix Storage Manager driver, found under **SATA Drivers** on Dell's driver and downloads support web site (**support.dell.com**)

Follow these steps to install the IMSM driver:

For Microsoft XP 32-Bit and 64-Bit operating systems:

- Installing the Intel IMSM driver using the Floppy Drive:
  - Boot to the Dell Recovery DVD (RDVD) and select **Create RAID driver** from the list of items. You will need a floppy disk drive and a diskette for this selection. The IMSM driver must be on the root of the A:\
  - Once the driver is extracted and stored on the target diskette, boot to the operating system CD and start the installation.
  - In the initial stage of Windows Setup, press <F6> to install the third-party IMSM SCSI or RAID drivers.
  - When prompted, insert the floppy disk containing the IMSM driver and follow the instructions provided by Windows Setup.
  - After reading the floppy disk, select **Intel(R) ICH9M-E/M SATA AHCI Controller** if in AHCI mode, or **Intel(R) ICH8M-E/ICH9M-eSATA RAID Controller** if in IRRT mode.

For Microsoft Vista 32-Bit and 64-Bit operating systems:

- Installing the Intel IMSM driver after the installation of the operating system:
  - Boot to the operating system DVD, and start the installation.
  - After completing the OS installation, insert the Dell RDVD.
  - Select the IMSM driver and follow the installation procedure.

If Intel Rapid Recovery or RAID Technologies is to be used, ensure the following:

- SATA operation mode in the BIOS is set to IRRT (applies to specific E-Family models except M6400), and set to RAID (applicable to Dell Precision M6400 only)
- Microsoft operating system was installed under IRRT or RAID mode, and the latest Intel Storage IMSM driver is installed
- Install the following Intel IMSM application provided by Dell:
  - Intel Matrix Storage Manager Application

Graphics and Audio

Audio drivers under XP 32-Bit and 64-Bit, and Vista 32-Bit and 64-Bit must be installed prior to installing the graphics driver. This applies to both Intel and nVidia graphics solutions.

Microsoft operating systems do not include the audio driver recommended by Dell, so you must install the following driver:

- IDT 92HDxxx HD Audio driver, found under **Audio** on Dell's driver and downloads support web site (**support.dell.com**)

Microsoft operating systems include the VGA graphics drivers only. For optimum graphics performance, Dell recommends installing the Dell graphics driver applicable to your system.

- For Intel Graphics - GM45 / GEE45 / GS45 offerings (available on all E-Family Latitude systems)
  - GM45/GE45/GS 45 Integrated graphics driver, found under **Video** on Dell's driver and downloads support web site (**support.dell.com**)
- For nVidia Graphics solution

  –Quadro™ NVS 160M driver, found under **Video** on Dell's driver and downloads support web site (**support.dell.com**), (available on E6400, E6500, M2400 and M4400)
  - Quadro FX 2700M / 3700M, found under **Video** on Dell's driver and downloads support web site (**support.dell.com**) (available on M6400)

Integrated Wired Network Controller

Broadcom (E5400, E5500, and M6400 Products Only)

- Microsoft operating systems XP 32-Bit and 64-Bit, and Vista 32-Bit and 64-Bit do not provide native support for the Broadcom 57xx Gigabit LoM device. Install the following Dell driver for network connectivity:
  - Broadcom 57XX Gigabit Integrated Controller driver, found under **Network** on Dell's driver and downloads support web site (**support.dell.com**)

Intel (E4200, E4300, E6400, E6500, and M2400 and M4400 Products Only)

- Microsoft operating systems XP 32-Bit and 64-Bit, and Vista 32-Bit and 64-Bit do not provide native support for the Intel 825xx Gigabit LoM device. Install the following Dell driver for network connectivity:
  - 825xx Gigabit Platform LAN Network device, found under **Network** on Dell's driver and downloads support web site (**support.dell.com**)

Dell ControlPoint

Dell ControlPoint is a Dell developed modular application providing access via a single interface to system settings for power management, displays and devices, connections, security and system information. The solution consists of three independent modules described below and are available only from Dell at **support.dell.com** under **Applications**.

DCP System Manager

Dell ControlPoint System Manager module provides a complete set of power management configuring and alerting capabilities:

- Battery Status
- Power Scheme and Sleep Mode
- Display and Devices
- Keyboard Backlighting and Hotkeys
- Extended Battery Life / All Day Battery Life

To enable features offered on Dell E-Family through Dell DCP System Manager, install the following application:

- Dell ControlPoint System Manager Application

For All Day Battery Life feature (ADBL), install the following Dell ControlPoint components offered by Dell in addition to the System Manager Module:

- Dell ControlPoint System Security Manager driver
- Dell ControlPoint System Manager XML file

For Ambient Light Sensor (ALS), install the following Dell Ambient Light Sensor Utility component of Dell ControlPoint in addition to the System Manager Module. This component is applicable to Vista 32-Bit and 64-Bit only, and is not required for XP 32-Bit and 64-Bit

- Dell Ambient Light Sensor Utility

The following table summarizes the Dell ControlPoint System Manager features offered on E-Family and the status of these features if the System Manager is not installed

Table 7-1. Dell ControlPoint System Manager Features

Feature		DCP Manager 1.0 or 1.1 Installed	Without DCP System Manager (Native Operating System)
Power Manager	User profiles	Yes	Yes
	View battery manufacturer info	Yes	No
	Battery health info	Yes	Thru BIOS
	Battery charge enable/disable status	Yes	Yes
	Network card power management	Yes	No
	Extended battery life/ All Day Battery Life (ADBL)	Yes	No
Display Settings	Inactive display and system timeouts when activating an external display using Fn+F8	Yes	No
Function Keys	Fn+F2 to enable Battery Charge Disable	Yes	No
	Fn+F3 to launch DCP with Battery Status	Yes	No

Table 7-1. Dell ControlPoint System Manager Features

Feature		DCP Manager 1.0 or 1.1 Installed	Without DCP System Manager (Native Operating System)
	Fn+F7 to enable/ activate DCP	Yes	No (in case none of other DCP modules installed)
	Fn+F8 to switch between displays	Yes	Yes (No screen pop-up display)
Hot Key customization	User hot key customization ability (also Fn+D functionality which is set to toggle display by default)	Yes	No
Keyboard backlighting	Keyboard backlighting options (to be able to set the intensity, inactive timeout values, and input triggers)	Yes	Yes
	Feedback through on screen display	Yes	No
Brightness	Ability to adjust Brightness Level	Yes	Yes
	Feedback through on screen display	Yes	No
ALS	Ability to enable/ disable ALS	Yes	Yes
	Feedback through on screen display	Yes	No
Privacy Panel (Fn+E) - Applicable only for nVidia discrete graphics		Yes	No

DCP Connection Manager

Dell ControlPoint Connections Manager module provides a complete communications management environment (currently only supports Dell Wireless LAN cards).

- Allow the user to create multiple mobile profile settings
- Ability to create, export, and import user defined usage profiles
- System custom configuration
- Execute comprehensive diagnostics and troubleshooting

It also provides the capability to enable or disable any of the radios on the notebook, such as Wi-Fi, Bluetooth GPS, UWB, and mobile broadband.

To enable features offered on Dell E-Family thru Dell DCP Connection Manager, install the following application:

- Dell ControlPoint Connection Manager Application

The following table summarizes the Dell ControlPoint Connection Manager features offered on E-Family and the status of these features if the Connection Manager is not installed:

Table 7-2. Dell ControlPoint Connection Manager Features

Feature	DCP Connection Manager 1.0 or 1.1 Installed	Without DCP Connection Manager, and Controller's Drivers and Apps Installed	Without DCP Connection Manager and Without Controller's Drivers and Apps (Native Operating System)
Airplane Mode	Yes	No	No
Broadcom Gigabit LAN	Yes	Yes	Yes
Dell Wireless WLAN 1397, Dell Wireless WLAN 1510	Yes	Yes with Intel ProSet™ or Dell Wireless Client Utility (DCU)	Yes with Wireless Zero Configuration (WZC)
Intel Wireless LAN 5100 and 5300	No (v. 1.0/ Yes (v1.1)	Yes with Intel ProSet or Dell Wireless Client Utility (DCU)	Yes with Wireless Zero Configuration (WZC)
Connection Logs	Yes	Yes with Intel ProSet or Dell Wireless Client Utility (DCU)	No
Connection Status	Yes	Yes with Intel ProSet or Dell Wireless Client Utility (DCU)	No
Conexant™ HDA D330 MDC v.92 Modem	Yes	Yes	Yes
Device Status	Yes	Yes with Intel ProSet or Dell Wireless Client Utility (DCU)	No
Diagnostics Connection based and Hardware based	Yes	Yes with Intel ProSet or Dell Wireless Client Utility (DCU)	No

Table 7-2. Dell ControlPoint Connection Manager Features

Feature	DCP Connection Manager 1.0 or 1.1 Installed	Without DCP Connection Manager, and Controller's Drivers and Apps Installed	Without DCP Connection Manager and Without Controller's Drivers and Apps (Native Operating System)
Disconnect on Ethernet WLAN	Yes	Yes with Intel ProSet or Dell Wireless Client Utility (DCU)	No
Disconnect on Ethernet WWAN	Yes	Yes with Intel ProSet or Dell Wireless Client Utility (DCU)	No
Dell Wireless 5530 HSPA Mini-Card	Yes	No	No
GPS Novatel™/ Ericsson®	Yes	Yes with Dell Mobile Broadband Client Utility (DMBCU) for 5720 EVDO (from Novatel) No for 5530 HSPA (from Ericsson®)	No
Hardware Radio Switch	Yes	Yes in the BIOS	Yes in the BIOS
Import/Export Profiles	Yes	Yes with Intel ProSet or Dell Wireless Client Utility (DCU)	No
Intel 825xx Gigabit	Yes	Yes	Yes
Location Profiles	Yes	No	No
Network Status Details	Yes	Yes with Intel ProSet or Dell Wireless Client Utility (DCU)	Yes
Dell Wireless Mobile Broadband 5720 MiniCard	Yes	Yes with Dell Mobile Broadband Client Utility (DMBCU) for 5720 EVDO (from Novatel)	No
Profile Management Wizard	Yes	Yes with Intel ProSet or Dell Wireless Client Utility (DCU)	No
SMS Text Messaging	Yes	Yes with Dell Mobile Broadband Client Utility (DMBCU) for 5720 EVDO (from Novatel) No for 5530 HSPA (from Ericsson)	No
SSO Prelogon (Windows XP only)	Yes	Yes with Intel ProSet or Dell Wireless Client Utility (DCU)	No

Table 7-2. Dell ControlPoint Connection Manager Features

Feature	DCP Connection Manager 1.0 or 1.1 Installed	Without DCP Connection Manager, and Controller's Drivers and Apps Installed	Without DCP Connection Manager and Without Controller's Drivers and Apps (Native Operating System)
Status Logs	Yes	Yes with Intel ProSet or Dell Wireless Client Utility (DCU)	No
Troubleshooting FAQ/ Web Links	Yes	Yes with Intel ProSet or Dell Wireless Client Utility (DCU)	No
View Available Networks and Site Monitor	Yes	Yes with Intel ProSet or Dell Wireless Client Utility (DCU)	No
VPN Enforcement	Yes	Yes with Dell Mobile Broadband Client Utility (DMBCU) for 5720 EVDO (from Novatel)	No
Wi-Fi Catcher	Yes	Basic Mode Only	Basic Mode Only

DCP Security Manager

Dell ControlPoint Security Manager module provides access to authentication, encryption, fingerprint readers and smartcard technologies:

- Obtain Security Status
- Manage Logins and Passwords
- Manage Data Protection

Microsoft operating systems do not have the desired drivers / applications necessary for the security functions offered on E-Family. Install the following components that are required to enable the security feature stack on E-Family:

- Dell ControlPoint Security Manager driver
  - The driver will install the device driver for the security devices installed in the Dell E-Family notebook computer. In addition it will install Microsoft Net framework 2.0 SP1 and any relevant MS QFEs required to allow these security devices to operate correctly
  - The driver supports the following Security devices:
    - Broadcom Trusted Platform Module

    - Atmel® Trusted Platform Module
    - STMicroelectronics® Trusted Platform Module
    - Winbond™ Trusted Platform Module
    - O2Micro® Smart Card Reader
    - Dell Smart Card Keyboard
    - UPEK TouchChip® Fingerprint Reader
    - Authentec® Fingerprint Reader
    - Broadcom Unified Security Hub
    - Vista Storage driver update (for ATAPI.SYS)
- Security Software Stack:
  - For these security devices to function and interface on E-Family notebooks. Install the appropriate software stack (Applications and Utilities)
  - The security software stack can be obtained thru one of the two options:
    - Dell ControlPoint Security Manager Application that is offered to E-Family Customers through Dell's support website (**support.dell.com**)
    - Third party security software specific to the customer's environment. Dell does not provide 3rd party security software.

Wireless Network Controller

Microsoft XP 32-Bit and 64-Bit, and Vista 32-Bit and 64-Bit operating systems do not provide native support for WLAN controllers featured in Dell E-Family systems. To obtain wireless network functionality, install the Wireless LAN device driver applicable to the WLAN devices installed in the notebook computer, found under **Network** on Dell's driver and downloads support web site (**support.dell.com**):

- Intel WiFi Link 5300
- Intel WiFi Link 5100
- Intel WiFi Link 5000
- Wireless WLAN 1397

- Wireless WLAN 1510

Bluetooth (Wireless PAN)

Microsoft XP 32-Bit and 64-Bit, and Vista 32-Bit and 64-Bit operating systems do not support the Bluetooth controllers featured on E-Family systems. To obtain Bluetooth functionality, install the associated Bluetooth device driver, found under **Network** on Dell's driver and downloads support web site (**support.dell.com**):

- Wireless 370 Bluetooth Minicard
- Wireless 410 BT + UWB Minicard

Broadband Wireless Wide Area Network Controller

Microsoft operating systems XP 32-Bit and 64-Bit, and Vista 32-Bit and 64-Bit do not provide native support for the broadband Wireless WAN controllers featured in Dell E-Family systems. To obtain broadband functionality, install the Broadband device driver applicable to the wireless WAN devices installed in the system and to the service carrier you have a contract with, found under **Communication** on Dell's driver and downloads support web site (**support.dell.com**):

- Wireless 5530 HSPA
- Wireless 5720 - TELUS® Mobile Broadband
- Wireless 5720 - Sprint® Mobile Broadband
- Wireless 5720 - VZW® Mobile Broadband

Touchpad

Microsoft XP 32-bit and 64-bit, and Vista 32-bit and 64-bit operating systems do not include the Dell touchpad driver. Install the following driver provided by Dell:

- Dell Touchpad / Pointing Stick, found under **Input Device Drivers** on Dell's driver and downloads support web site (**support.dell.com**)

Modem (Not applicable to Dell Precision M6400)

Microsoft XP 32-bit and 64-bit, and Vista 32-bit and 64-bit operating systems do not include the Conexant modem driver. Install the following driver provided by Dell:

- Conexant D330,HDA,MDC,v.92,modem found under **Communication** on Dell's driver and downloads support web site (**support.dell.com**)

NOTE: If Dell ControlPoint Connection Manager module is installed, the Conexant modem driver does not need to be installed

Intel vPro or AMT (Applicable ONLY to vPro Configurations)

Intel Active Management Technology (Intel AMT) allows users to easily manage networked computers to:

- Discover computing assets on a network
- Remotely repair systems even after operating system failures
- Protect networks from incoming threats while easily keeping software up to date

Ensure that the following drivers provided by Dell are being installed prior to installing the AMT drivers:

- Intel Mobile Chipset driver
- Intel 825xx Gigabit Platform LAN Network Device
- Wireless WLAN driver

Microsoft XP 32-Bit and 64-Bit, and Vista 32-bit and 64-bit operating systems do not include the AMT drivers. Therefore install the following AMT related drivers provided by Dell, found under **Chipset** on Dell's driver and downloads support web site (**support.dell.com**):

- Intel AMT HECI
- Intel AMT SOL/ LMS

Touch Screen Digitizer (E6400 ATG only)

Microsoft XP 32-bit and 64-bit, and Vista 32-bit and 64-bit operating systems do not include the Digitech digitizer driver and application. Install the following drive and app provided by Dell, found under **Input Device Drivers** on Dell's driver and downloads support web site (**support.dell.com**):

- Digitech Touchscreen driver - E6400ATG

Windows Update

Dell recommends performing Microsoft Windows updates to ensure latest security, reliability and compatibility updates are installed. These updates can be downloaded from **update.microsoft.com**.

Miscellaneous

Dell e-Docks (E-Family Docking Stations)

Dell E-Family docking stations are architected differently than previous generations of Dell docking stations.

To enhance Plug And Play performance E-Family products no longer require a docking profile

Webcam

The Dell E-Family Webcam driver enables the built-in system digital camera. Install the following driver provided by Dell:

- Creative Labs Integrated Webcam driver, found under **Input Device Drivers** on Dell's driver and downloads support web site (**support.dell.com**)
- For video capturing / streaming features, install webcam software available from a variety of third party providers and as freeware.